



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/987,887

11/16/2001

Ryuta Tanaka

1075.1181

7579

21171 7590 01/12/2007
STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

TRUONG, CAMQUY

ART UNIT

PAPER NUMBER

2195

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/987,887

Applicant(s)

TANAKA ET AL.

Examiner

Camquy Truong

Art Unit

2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35 and 37-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9,11,15,17,21,23,27,29,33,35 and 37-46 is/are rejected.
- 7) ☒ Claim(s) 13,19,25 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37-46 are presented for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 9, 21, 33, 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following terms lack proper antecedent basis:

- i. said last-named one processor – claim 9.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 5, 7, 9, 11, 37-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Catthoor et al. (U.S. Patent 6,223,274 B1) in view of Song et al. (U.S. patent 6,061,711).

5. As to claim 1, Catthoor teaches the invention substantially as claimed including:

two or more processor elements whose performances are to be executed by a common program (the customized processor execute a first code portion and the flexible processor execute the second code portion, wherein the first code portion and the second code portion is belong to application program, col.19-21; col. 5, lines 7-21);

a storing section, responsive to each switching of said processor elements by said control section, for storing handover information relating to the common program which information is to be handed over from said one processor element to said another processor element (the programmable has a register and the customized processor is adapted to transmit information relating to the status of routines running on the custom processor for storage in register, col. 30, lines 26-30);

a store control section for storing said handover information from said one processor elements into said storing section when said switching signal detecting section detects the switching request signal (col. 30, lines 26-30);

a stop control section for stopping the performance of said one processor element after said store control sections stores said handover information into said storing section (select interruption point and switching context between processor, col. 29, lines 66 – col. 30, line 20); and

a start control section for starting the performance of said another processor element using said handover information stores in said storing section (executing a second code portion on the flexible processor using at least a part of first data left in the

Art Unit: 2195

data store by the execution of the first code portion on the customized processor, col. 5, lines 7-21).

6. Catthoor does not explicitly teach switching request signal detecting section detects the switching request signal. However, Song teaches switching request signal detecting section detects the switching request signal (col. 2, lines 55-57; col. 16, line 53 – col. 17, line 5).

7. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Catthoor and because Song's switching request signal detecting section detects the switching request signal would improve the use efficiency Catthoor's system by providing the step of switching request signal detecting section detects the switching request signal to increase the system's performance with reducing the amount of processor state information transfer during a context switch.

8. As to claim 3, Song teaches if a performance requested to be executed for one of said plural processor elements is to be made by another processor element, said another processor element outputs said switching request signal to (col. 15, lines 43-44).

Art Unit: 2195

9. As to claim 5, Song teaches switching request signal is a switching control interruption signal (col. 6, lines 24-35).

10. As to claims 7, 9 and 11, Song teaches upon receipt of a signal from outside said system, said control section outputs an interruption signal to another processor element to stop the performance thereof (col. 6, lines 24-35).

11. As to claims 37-38 and 40-41, Song teaches at least one of plural processor elements is an MPU and the remainder is a DSP, or vice versa (Fig. 2).

12. As to claim 39, it is rejected for the same reason as claims 7, 9, and 11.

13. As to claim 42, Song teaches invalidating section for invalidating the switching function of said control section to thereby actuate at least two or more of said plural processor elements simultaneously (col.11, lines 6-14).

14. As to claim 43, Song teaches handover information to be stored in said storing section includes at least one selected from the group consisting of a value of a program counter, an argument of a function, a return value of a function, and content of a stack pointer (col. 16, line 60 – col. 17, line 8).

15. As to claims 44-46, they are rejected for the same reason as claim 1.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 1, 3, 5, 7, 9, 11, 37-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Traversat et al. (U.S. Patent 6,763,440 B1) in view of Song et al. (U.S. Patent 6,061,711).

18. As to claim 1, Traversat teaches the invention substantially as claimed including:
two or more processor elements whose performances are to be executed by a common program (application 104a is execute by client 100, and a checkpointed state of application 104a may be sent to client 130 and resume executing on client 130, col. 28, lines 28-36);

a storing section, responsive to each switching of said processor elements by said control section, for storing handover information relating to the common program which information is to be handed over from said one processor element to said another processor element (the chedkpointed persistent state of the application 104 stored in persistent store 120, col. 27, lines 66-67; col. 29, lines 3-10);

Art Unit: 2195

a store control section for storing said handover information from said one processor elements into said storing section when said switching request signal detecting section detects the switching request signal (when migrating application 104a to client 130, a checkpointed state of application 104a may be sent to client 130, col. 28, lines 29-31);

a stop control section for stopping the performance of said one processor element after said store control sections stores said handover information into said storing section (the client system 100 may be interrupted to commit a store checkpoint; col. 24, lines 55-59); and

a start control section for starting the performance of said another processor element using said handover information stores in said storing section (the application 104 may resume running using on the client system 130, col. 29, lines 22-29).

19. Traversat does not explicitly teach switching request signal detecting section detects the switching request signal. However, Song teaches switching request signal detecting section detects the switching request signal (col. 2, lines 55-57; col. 16, line 53 – col. 17, line 5).

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Traversat and Song because Song's switching request signal detecting section detects the switching request signal would improve the use efficiency Traversat's system by providing the step of switching request

Art Unit: 2195

signal detecting section detects the switching request signal to increase the system's performance with reducing the amount of processor state information transfer during a context switch.

21. As to claim 3, Song teaches if a performance requested to be executed for one of said plural processor elements is to be made by another processor element, said last-named one processor element outputs said switching request signal to (col. 15, lines 43-44).

22. As to claim 5, Song teaches switching request signal is a switching control interruption signal (col. 6, lines 24-35).

23. As to claims 7, 9 and 11, Song teaches upon receipt of a signal from outside said system, said control section outputs an interruption signal to the last-one named another processor element to stop the performance thereof (col. 6, lines 24-35).

24. As to claims 37-38 and 40-41, Song teaches at least one of plural processor elements is an MPU and the remainder is a DSP, or vice versa (Fig. 2).

25. As to claim 39, it is rejected for the same reason as claims 7, 9, and 11.

Art Unit: 2195

26. As to claim 42, Song teaches invalidating section for invalidating the switching function of said control section to thereby actuate at least two or more of said plural processor elements simultaneously (col.11, lines 6-14).

27. As to claim 43, Song teaches handover information to be stored in said storing section includes at least one selected from the group consisting of a value of a program counter, an argument of a function, a return value of a function, and content of a stack pointer (col. 16, line 60 – col. 17, line 8).

28. As to claims 44-46, they are rejected for the same reason as claim 1.

Allowable Subject Matter

29. Claims 13, 19, 25, 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

30. Claims 21, 33, 35, would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Art Unit: 2195

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camquy Truong whose telephone number is (571) 272-3773. The examiner can normally be reached on 8AM – 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3756.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

Camquy Truong

January 3, 2007


SUPERVISORY PATENT EXAMINER
BIOLOGY CENTER 2100